

REMARKS

A. Introduction

Applicants have carefully reviewed the Office Action mailed 16 July 2007. By this Amendment, claims 19-40 are cancelled, claim 53 is amended, and claim 69 is added. Claims 1-18 were previously cancelled. It is noted that Applicants have made the above-identified modifications to the claims solely to advance prosecution of the application and to obtain allowance on allowable claims at the earliest possible date. Accordingly, no admission may be inferred from the modifications of claims herein. Applicants expressly reserve the right to pursue the originally filed claims in the future. Additionally, Applicants submit that the amendments made herein introduce no new matter. The following sections correspond to the sections of the 16 July 2007 Office Action.

B. Election/Restrictions

Per Examiner's instructions, claims 19-40 are cancelled by this Amendment.

C. Information Disclosure Statement

Applicants respectfully disagree with Examiner's conclusion that the information disclosure statement filed 23 August 2004 fails to comply with 37 C.F.R. § 1.98(a)(2). Applicants believe that the information disclosure statement filed 23 August 2004 complies with 37 C.F.R. § 1.98(d), which provides an exception to 37 C.F.R. § 1.98(a). Section (d) states:

A copy of any patent, publication, pending U.S. application or other information, as specified in paragraph (a) of this section, listed in an information disclosure statement is required to be provided, even if the patent, publication, pending U.S. application or other information was previously submitted to, or cited by, the Office in an earlier application, unless:

(1) The earlier application is properly identified in the information disclosure statement and is relied on for an earlier effective filing date under 35 U.S.C. 120; and

(2) The information disclosure statement submitted in the earlier application complies with paragraphs (a) through (c) of this section.

(emphasis added)

Applicants respectfully submit that the 23 August 2004 information disclosure statement meets the requirements of 37 C.F.R. § 1.98(d)(1)-(2). It states,

“Copies of the references listed are of record in Application No. 09/428, 358, filed October 28, 1999 (now U.S. Patent No. 6,374,667, issued April 23, 2002), and Application No. 10/087,302, filed February 28, 2002, from which the present application derives priority. In accordance with 37 C.F.R. § 1.98(d), applicant is not disclosing additional copies of these references.”

Moreover, Applicants respectfully submit that the 23 August 2004 information disclosure statement complies with 37 C.F.R. § 1.98(a)-(c). Accordingly, Applicants respectfully submit that they were not required to provide legible copies of the foreign patent documents along with the 23 August 2004 information disclosure statement.

Nevertheless, for Examiner’s convenience, Applicants provide legible copies of those foreign patent documents with this Amendment. Thus, Applicants respectfully request that Examiner expressly consider those foreign patent documents and make

them of record in the present application such that they appear among the “References Cited” on any patent to issue therefrom.

D. Claim Rejections – 35 USC § 102

1. *Independent Claims 41 and 56*

Applicants respectfully traverse Examiner’s § 102 rejection of independent claims 41 and 56 because Applicants believe that U.S. Patent No. 3,731,184 to Goldberg et al. (“Goldberg”) does not disclose each and every element of those claims. Those claims recite (i) “a patient coil” and (ii) “first and second matched pairs of fixed coils.” They also recite a particular arrangement of the first and second matched pairs of fixed coils that reduces a sum of magnetic noise signals from remote sources to zero.

With all due respect, Applicants submit that Examiner’s characterization of Goldberg’s disclosure is mistaken. Applicants submit that Examiner is mistaken in citing Goldberg’s field coils 10, 11 as corresponding to the claimed “first and second matched pairs of fixed coils.” Applicants respectfully submit that field coils 10, 11 are not each pairs of coils, as is required by the claims. Rather, they are each single coils—perhaps together forming one pair of coils. Based on this understanding of Goldberg, Applicants respectfully submit that Goldberg lacks the claimed “first and second matched pairs of fixed coils.”

Applicants also submit that Examiner is mistaken in citing Goldberg column 9, lines 24-40, as disclosing the claimed arrangement of the first and second matched pairs of fixed coils. That section in Goldberg discusses how the pick-up coil 12—which

Examiner contends corresponds to the claimed “patient coil” not the claimed “pairs of fixed coils”—minimizes measurement errors. But the claims require the arrangement of the “pairs of fixed coils” to reduce a sum of magnetic noise signals from remote sources to zero. Applicants respectfully submit that Goldberg does not disclose such an arrangement.

Additionally, Applicants submit that Examiner is mistaken in citing Goldberg column 9, lines 24-40, as disclosing reducing a sum of magnetic noise signals *from remote sources* to zero. That section in Goldberg describes configuring the pick-up coil 12 in order to correct errors caused by “portions of the conductor [being] spaced from the surface of the member” (col. 9, ll. 25-27), not by “remote sources,” as recited in the claim. Based on this understanding of Goldberg, Applicants respectfully submit that Goldberg does not disclose reducing a sum of magnetic noise signals from remote sources to zero.

Finally, and perhaps most importantly, Applicants submit that the Goldberg device is actually incapable of reducing a sum of magnetic noise signals from remote sources to zero. In Figures 2, 20d, 20e, and 21, Goldberg shows field coils 10, 11 arranged symmetrically about pick-up coil 12 and auxiliary coil 60. The purpose of this arrangement is to create a homogeneous magnetic field in a region occupied by the pick-up coil 12 and auxiliary coil 60. This arrangement of field coils 10, 11 is called a “Helmholz pair” and is commonly used to create homogeneous magnetic fields in MRI scanners.

Applicants submit that Goldberg's Helmholtz pair cannot reduce a sum of magnetic noise signals from remote sources to zero. Those skilled in the art would understand that, for a Helmholtz pair to function, the electrical connections to the field coils 10, 11 must be arranged so that the field coils 10, 11 produce magnetic fields that are connected electrically in the same phase. In this way, magnetic noise signals from remote sources would actually be amplified rather than eliminated. For the field coils 10, 11 to reduce a sum of magnetic noise signals from remote sources to zero, they would have to produce magnetic fields connected electrically in opposite phases. But in such an arrangement, all magnetic signals—not just noise—would be reduced to zero, thereby eliminating any possibility of measuring the movement of an object.

In contrast, the claimed invention is capable of measuring the movement of an object to an even greater precision by reducing a sum of magnetic noise signals from remote sources to zero, while at the same time generating a relatively homogeneous magnetic field in a spatial volume occupied by the patient's body part. Accordingly, based on this understanding of Goldberg, Applicants respectfully request Examiner to withdraw the § 102 rejection of independent claims 41 and 56 and to allow claims 41-69.

2. Amended Dependent Claim 53 and New Dependent Claim 69

Applicants have also amended claim 53 (dependent from claim 41) and added claim 69 (dependent from claim 56) to clarify a particular novel, nonobvious feature of the present invention. Claims 53 and 69 specifically recite that “the first matched pair of fixed coils comprises first and second fixed coils connected electrically in opposite

phases” and that “the second matched pair of fixed coils comprises third and fourth fixed coils connected electrically in opposite phases.”

In this arrangement, a noise signal from a remote source is detected by both the first and second fixed coils, and, because those fixed coils are “connected electrically in opposite phases,” the sum of the noise signals is reduced to zero. The same holds true for noise signals detected by the third and fourth fixed coils. Additionally, the arrangement of the *pairs* of coils generates a relatively homogeneous magnetic field in a spatial volume occupied by the patient’s body part. Thus, unlike the Helmholtz pair describe in Goldberg, Applicants submit that the claimed arrangement of the matched pairs of fixed coils accomplishes both noise cancellation and homogeneity. Accordingly, Applicants respectfully request Examiner to allow claims 53 and 69.

E. Conclusion

In light of the foregoing, Applicants respectfully submit that the present rejections should be withdrawn. Prompt allowance of this application is respectfully requested. The Commissioner is hereby authorized to grant any extensions of time and to charge any fees under 37 C.F.R. §§ 1.16 and 1.17 that may be required during the entire pendency of this application and to charge any underpayment or credit any overpayment to Deposit Account No. 06-1910.

Respectfully submitted,

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Please grant any extension of time necessary for entry; charge any fee due to Deposit Account No. 06-1910.

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